" *To His Royal Highness Prince Albert of Saxe Coburg and Gotha, K.G., F.R.S., &c.*

" The Humble Address of the President, Council, and Fellows of the Royal Society of London for improving Natural Knowledge.

" May it please Your Royal Highness,

" We, the President, Council, and Fellows of the Royal Society of London for improving Natural Knowledge, beg to be permitted, on the present occasion, to offer to Your Royal Highness our congratulation on the providential escape of Her Majesty and Your Royal Highness from the murderous attack of an assassin.

" That the same Almighty Arm may continue to preserve Her Majesty and Your Royal Highness from every danger, and from every evil, is our most sincere and earnest prayer."

June 9, 1842.

The MARQUIS OF NORTHAMPTON, President, in the Chair.

A paper was read, entitled, " On the Specific Inductive Capacities of certain Electric Substances." By William Snow Harris, Esq., F.R.S.

The author, pursuing the experimental inquiry suggested by the theory of Mr. Faraday relative to the differences in specific inductive capacity exhibited by different dialectric substances, instituted a series of experiments for determining with precision their comparative powers of insulation, and of sustaining by induction charges of electricity. The substances to be examined were cast into the form of circular plates and furnished on both their surfaces with circular coatings of tinfoil of a diameter equal to one-half that of the plate, and the electric intensities were measured by electrometers of the same construction as those which he used in his former experiments, and which he has described in his papers already published in the Philosophical Transactions for 1839. The results are stated in tables; from the last of which it appears that the inductive capacities of the dialectric bodies tried, that of air being expressed by unity, are proportional to the following numbers:—

Substances.	Relative capacities.
Air	1
Rosin	1·77
Pitch	1·8
Bees' wax	1·86
Glass	1·9
Brimstone	1·93
Shell-lac	1·95

The author, in conclusion, offers some observations on the expe-

rimental processes employed in his investigation; and points out several circumstances which require to be attended to in order to ensure success.

June 16, 1842.

SIR JOHN W. LUBBOCK, Bart., V.P. and Treas., in the Chair.

The following papers were read, viz.—

1. "On the Action of the Rays of the Solar Spectrum on Vegetable Colours." By Sir John Frederick William Herschel, Bart., K.H., F.R.S.

The author, having prosecuted the inquiry, the first steps of which he communicated in a paper read to the Royal Society in February 1840, relating to the effects of the solar spectrum on the colouring matter of the *Viola tricolor*, and on the resin of guaiacum, relates, in the present paper, the results of an extensive series of similar experiments, both on those substances, and also on a great number of vegetable colours, derived from the petals of flowers, and the leaves of various plants. In the case of the destruction of colour of the preparations of guaiacum, which takes place by the action of heat, as well as by the more refrangible rays of light, he ascertained that although the non-luminous thermic rays produce an effect, in as far as they communicate heat, they are yet incapable of effecting that peculiar chemical change which other rays, much less copiously endowed with heating power, produce in the same experiment. He also found that the discoloration produced by the less refrangible rays is much accelerated by the application of artificial terrestrial heat, whether communicated by conduction or by radiation; while, on the other hand, it is in no degree promoted by the purely thermic rays beyond the spectrum, acting under precisely similar circumstances, and in an equal degree of condensation. The author proceeds to describe, in great detail, the photographic effects produced on papers coloured by various vegetable juices, and afterwards washed with solutions of particular salts; and gives a minute account of the manipulations he employed for the purpose of imparting to paper the greatest degree of sensitiveness to the action of solar light. This action he found to be exceedingly various, both as regards its total intensity and the distribution of the active rays over the spectrum. He observed, however, that the following peculiarities obtain almost universally in the species of action exerted.

First, the action is *positive*; that is to say, light destroys colour, either totally, or leaving a residual tint, on which it has no further, or a very much slower action; thus effecting a sort of chromatic analysis, in which two distinct elements of colour are separated, by destroying the one and leaving the other outstanding. The older the paper, or the tincture with which it is stained, the greater is the amount of this residual tint.